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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,128	09/26/2003	Phil Mages	NC34668	6082

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EXAMINER
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HUANG, WEN WU

ART UNIT	PAPER NUMBER
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2682

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/672,128

**Applicant(s)**

MAGES, PHIL

**Examiner**

Wen Huang

**Art Unit**

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19-27 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 10 recites the limitation "the signal power" in second line of claim 10.

There is insufficient antecedent basis for this limitation in the claim.

It is unclear what is the relationship between the signal power and the first and second couplers.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Sawchuk (US. 6,272,329).

Regarding claim 1, Sawchuk teaches a system that facilitates signal transmission and reception (see Sawchuk, col. 1, lines 48-49), comprising:

a first component (see Sawchuk, fig. 1, components 134, 132, 54 and 52) configured to convey signals within a transmission and reception frequency band (see Sawchuk, fig. 4, components 44, 46 and 142); and

a second component (see Sawchuk, fig. 1, components 20 and 26) that interfaces the first component to a front-end and a back-end (see Sawchuk, fig. 1, components 36, 32, 34, 16 and 28), the second component providing isolation between the first component and the front and back ends (isolation is provided by reducing leakage path; see Sawchuk, col. 3, lines 29-30).

Regarding claim 2, Sawchuk also teaches the system of claim 1, the first component provides concurrent signal transmission and reception (see Sawchuk, col. 1, lines 48-49).

Regarding claim 3, Sawchuk further teaches the system of claim 1, the first component comprising two or more filters (see Sawchuk, fig. 1, components 132, 134, 52 and 54).

Regarding claim 4, Sawchuk further teaches the system of claim 3, the two or more filters configured to determine the transmission and reception frequency band (see Sawchuk, col. 4, lines 61-6 and col. 6, lines 36-37; fig. 4, components 44, 42 and 142).

Regarding claim 26, Sawchuk teaches a methodology for receiving signals, comprising:

accepting a signal (see Sawchuk, col. 1, lines 56-57);  
conveying the signal to a balanced duplexer, the signal conveyed through at least one filter of the balanced duplexer (see Sawchuk, col. 2, lines 1-3), and  
isolating the signal from a transmitted signal (see Sawchuk, col. 1, lines 28-30 and col. 3, lines 28-30).

2. Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Tsujimoto (US. 5,982,825).

Regarding claim 23, Tsujimoto teaches a methodology for transmitting signals (see Tsujimoto, col. 3, lines 57-59), comprising:

conveying a generated signal to a balanced duplexer (see Tsujimoto, fig. 4, component 101), the signal divided into two portions (see Tsujimoto, fig. 4, component 126), a first portion with a first signal power transmitted through a first filter of the balanced duplexer (see Tsujimoto, fig. 4, component 122-1, col. 5, lines 27-29) and a remaining portion transmitted through a second filter, the remaining portion associated with a remaining signal power (see Tsujimoto, fig. 4, component 122-2);

combining the first portion and second signal portions (see Tsujimoto, fig. 4, component 127, col. 5, lines 27-29); and

transmitting the signal (see Tsujimoto, fig. 4, component 106).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawchuk as applied to claim 1 above, and further in view of Politi (US. 6,738,611).

Regarding claim 5, Sawchuk teaches the system of claim 1, the second component comprising two couplers (see Sawchuk, col. 3, lines 7-8).

Sawchuk fails to teach that, the second component comprising two 3db hybrid couplers.

Politi teaches that, the second component comprising two 3db hybrid couplers (see Politi, col. 4, line 27, 30 and 38).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Sawchuk with the teaching of Politi in order to reject or suppress unwanted frequency (see Politi, col. 4, lines 10-11).

Regarding claim 6, the combination of Sawchuk and Politi further teaches the system of claim 5, the 3db hybrid couplers comprising a Lange coupler (see Politi, col. 4, lines 31).

Regarding claim 8, the combination of Sawchuk and Politi also teaches the system of claim 1 employed within a mobile phone (see Politi, col. 5, lines 56 and 58-59).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawchuk and Politi as applied to claim 6 above, and further in view of Crescenzi, Jr. (US. 6,549,090).

Regarding claim 7, the combination of Sawchuk and Politi teaches the system of claim 6.

However, the combination of Sawchuk and Politi fails to teach that, the Lange coupler comprising gold traces on a substrate.

But, Crescenzi, Jr. teaches a Lange coupler (see Crescenzi, Jr. col. 1, line 15) comprising gold traces on a substrate (see Crescenzi, Jr. col. 2, line 43).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Sawchuk and Politi with the teaching of Crescenzi, Jr. in order to provide higher conductivity on the substrate.

Art Unit: 2682

5. Claims 9, 14, 17 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawchuk in view of Nakamura et al (US. 6,747,527) and Beaudin et al (US. 6,710,650).

Regarding claim 9, Sawchuk teaches a balanced duplexer, comprising:

a first filter (see Sawchuk, fig. 1, components 134 and 132);

a second filter (see Sawchuk, fig. 1, components 52 and 54);

a first coupler (see Sawchuk, fig. 1, component 20) that interfaces the first and second filters to a processing unit (see Sawchuk, fig. 1, component 36) of a device; and

a second coupler (see Sawchuk, fig. 1, component 26) that interfaces the first and second filters to an antenna (see Sawchuk, fig. 1, component 28), a detector (see Sawchuk, fig. 1, component 28), the balanced duplexer is employed to facilitate transmitting and receiving signals through the first and second filters (see Sawchuk, col. 1, lines 48-49).

However, Sawchuk fails to teach that comprising:

the first and second filters have a substantially similar input and output;

the first coupler that interfaces the first and second filters to a first termination;

and

the second coupler that interfaces the first and second filters to a second termination.

But, Nakamura et al teach that comprising:



the first and second filters have a substantially similar input and output (see Nakamura et al, col. 1, line 66 – col. 2, line 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Sawchuk with the teaching of Nakamura et al in order to provide match impedance between transmitting and receiving paths seen from the couplers and to achieve a balanced duplexer.

The combination of Sawchuk and Nakamura et al fails to teach that further comprising:

the first coupler that interfaces the first and second filters to a first termination;  
and

the second coupler that interfaces the first and second filters to a second termination.

But, Beaudin et al teach that comprising:

the first coupler (see Beaudin et al, fig. 2, component 22) that interfaces the first and second filters to a first termination (see Beaudin et al, fig. 2, component 30); and

the second coupler (see Beaudin et al, fig. 2, component 20) that interfaces the first and second filters to a second termination (see Beaudin et al, fig. 2, component 28).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Sawchuk and Nakamura et al with the teaching of Beaudin et al in order to dissipate in a load components of the signal which are reflected in the input (see Beaudin et al, col. 3, lines 18-20).

Regarding claim 14, the combination of Sawchuk, Nakamure et al and Beaudin teaches the system of claim 9, the balanced duplexer inherently buffers an input and an output stage (the first and second couplers inherently act as buffers as the first and second couplers diverting reflected power; see Beaudin et al, col. 3, lines 18-20; fig. 2, components 30 and 28).

Regarding claim 17, the combination of Sawchuk, Nakamure et al and Beaudin et al teaches the system of claim 9, the first and second terminations is about 50 Ohms (see Beaudin et al, fig. 2, components 30 and 28).

Regarding claim 20, the combination of Sawchuk, Nakamure et al and Beaudin et al teaches the system of claim 9, the first and second couplers divert reflected power into the first and second terminations, respectively (see Beaudin et al, col. 3, lines 18-20; fig. 2, components 30 and 28).

Regarding claim 21, the combination of Sawchuk, Nakamure et al and Beaudin et al teaches the system of claim 9, the first and second couplers reduce reflected energy by combining reflected energy that is 180 degrees out of phase (see Beaudin et al, col. 4, lines 31-36).

Regarding claim 22, the combination of Sawchuk, Nakamure et al and Beaudin et al teaches the system of claim 9, the first and second filters employed in the

Art Unit: 2682

reception of a signal (see Sawchuk, fig. 1, components 134, 132, 52 and 54) inherently to improve LNA and antenna matching (when the first and second filters have a substantially similar input and output impedance, the front-end and back-end impedance matching is inherently achieved).

6. Claims 15-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawchuk, Nakamure et al and Beaudin et al as applied to claim 9 above, and further in view of Politi.

Regarding claim 15, the combination of Sawchuk, Nakamure et al and Beaudin et al teaches the system of claim 9.

However the combination of Sawchuk, Nakamure et al and Beaudin et al fail to teach that the first and second couplers being 3 dB hybrid couplers comprising one of a Lange coupler and a discrete coupler.

But, Politi teaches that the first and second couplers being 3 dB hybrid couplers (see Politi, col. 4, line 27, 30 and 38) comprising a Lange coupler (see Politi, col. 4, lines 31).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Sawchuk, Nakamure et al and Beaudin et al with the teaching of Politi in order to reject or suppress unwanted frequency (see Politi, col. 4, lines 10-11).

Art Unit: 2682

Regarding claim 16, the combination of Sawchuk, Nakamure et al, Beaudin et al and Politi teaches the system of claim 15, the Lange coupler providing isolation between the first and second filters and the processing unit and the first and second filters and the antenna and detector (isolation is provided by reducing leakage path; see Sawchuk, col. 3, lines 29-30).

Regarding claim 19, the combination of Sawchuk, Nakamure et al, Beaudin et al and Politi teaches the system of claim 9 employed within a mobile phone (see Politi, col. 5, lines 56 and 58-59).

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto as applied to claim 23 above, and further in view of Politi.

Regarding claim 24, Tsujimoto teaches the method of claim 23.

However, Tsujimoto fails to teach that further comprising employing 3 dB hybrid couplers to divide and combine the generated signal.

But, Politi teaches a method for transmitting signals comprising employing 3 dB hybrid couplers to divide and combine the generated signal (see Politi, col. 4, line 27, 30 and 38).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Tsujimoto with the teaching of Politi in order to reject or suppress unwanted frequency (see Politi, col. 4, lines 10-11).

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto and Politi as applied to claim 24 above, and further in view of Sawchuk.

Regarding claim 25, the combination of Tsujimoto and Politi teaches the method of claim 24.

However, the combination of Tsujimoto and Politi fails to teach that further comprising providing isolation between the 3db hybrid couplers and a signal generating and a transmitting component.

But, Sawchuk teaches a method for transmitting signals comprising providing isolation between the 3db hybrid couplers and a signal generating and a transmitting component (see Sawchuk, col. 1, lines 28-29).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Tsujimoto and Politi with the teaching of Sawchuk in order to reduce distortion due to unwanted coupling (see Sawchuk, col. 1, lines 19-20).

9. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawchuk in view of Beaudin et al.

Regarding claim 27, Sawchuk teaches a system that facilitates concurrent signal transmission and reception via a balanced duplexer (see Sawchuk, col. 1, lines 48-49), comprising:

means for coupling a generated signal with the balanced duplexer (see Sawchuk, fig. 1, component 20);

means for coupling a received signal with the balanced duplexer (see Sawchuk, fig. 1, component 26);

means for isolating the generated signal from the received signal (see Sawchuk, col. 1, lines 28-30 and col. 3, lines 28-30);

means for filtering the generated and received signals (see Sawchuk, fig. 1, components 132, 134, 52 and 54).

However, Sawchuk fails to teach that further comprising:

means for diverting power reflections associated with the generated and received signals to terminations.

But, Beaudin et al teach that comprising:

means for diverting power reflections associated with the generated and received signals to terminations (see Beaudin et al, fig. 2, components 28 and 30, col. 3, lines 18-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Sawchuk with Beaudin et al in order to dissipate in a load components of the signal which are reflected at the input.

***Allowable Subject Matter***

Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 18, the combination of Sawchuk, Nakamura et al and Beaudin et al teaches the system of claim 9.

However, the combination of Sawchuk, Nakamura et al and Beaudin et al fail to teach that the first and second filters comprising acoustic filters comprising SAW and BAW filters.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sillard et al (US. 4,361,819) teach a passive semiconductor duplexer with 3db hybrid couplers.

Hagstrom et al (US. 6,185,434) teach an antenna filtering arrangement.

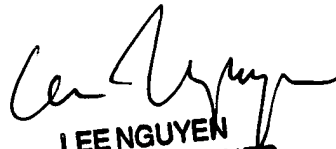
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen Huang whose telephone number is (703) 305-6285. The examiner can normally be reached on 10am - 6pm.

Art Unit: 2682

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (703) 308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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3/21/05

  
LEE NGUYEN  
PRIMARY EXAMINER